

0DODULD DPRQJ WKH *HULDWULF 3RSXODWLRQ 3UHYDOHQFH &RPSOLFDWLRQV DQG &R PRUELGLW\

&KXNZXRFKD 80 XNZXRFKD 80 GXMLK 2* \$PDGL &1 1ZRNH (\$ DQG ,EHK 612
'HSDUWPHQW RI 3XEOLF +HDOWK 7HFKQRORJ\)HGHUO 8QLYHUVLW\ RI 7HFKQRORJ\ 2ZHUUL 1LJHULD
&RUUHVSRLQGLQJ &KXNZXRFKD 80 'HSDUWPHQW RI 3XEOLF +HDOWK 7HFKQRORJ\)HGHUO 8QLYHUVLW\ RI
FKXNZXRFKDXFKHP#\DKRR FRP
5HFHLYHG GDUWFK \$FFHSWHG GDSME OLSMLKFCSSGIDWH
&RS\ULJKW < &KXNZXRFKD 80 HW DO 7KLV LV DQ RSHQ DFFHVV DUWLFOH GLVWULEXWHG XQGHU W
XQUHVWULFWHG XVH GLVWULEXWLRQ DQG UHSURGXFWLRQ LQ DQ\ PHGLXP SURYLGHG WKH RULJLQDO D

\$EVWUDFW

7KLWVXG\ ZDV GRQH WR DVFHUWDLQ PDODULD SUHYDOHQFH LWV FRPSOLFDWLRQ
GLVHDSVHV DPRQJ WKH JHULDWULF SRSXODWLRQ LQ SDUW RI 6RXWK (DVWHUQ 1
EHWZHHQ WKH DJHV RI DQG \HDUV ZHUH UHFUXLWHG LQ ,KLDJZD 6RXWK (DVW
FROOHFWHG IURP WKHP ZHUH *LHPVD VWDLQHG DQG H[DPLQHG PLFURVFRSLFDOO\
LQ DGGLWLRQ WR KHDOWK IDFLOLW\ UHFRUGV DQDO\VLV ZHUH GRQH WR GHWHUPLQ
FR PRUELGLW\ ZLWK QRQ FRPPXQLFDEOH GLVHDSHV

7KHUH ZDV KLJK PDODULD SUHYDOHQFH DPRQJ VWXG\ VXEMHFWV 5HVSLUDWRU
FRPSOLFDWLRQ DVVRFLDWHG ZLWK LW ZKLOH 'LDEHWHV 0HOOLWV ZDV
FRPPXQLFDEOH GLVHDSV 7KH ROGHU DGXOWV VKRXOG EH DGHTXDWHO\ LQFOXG
LQYHVWLJDWLRQV LQWR WKH SDWWHUQ G\QDPLFV DQG IDFWRUV UHODWLQJ WR
GLVHDSHV DPRQJ WKLV DJH JURXS VKRXOG EH JLYHQ XUJHQW DWWHQWLRQ

.H\ZRUGV 0DODULD *HULDWULF SRSXODWLRQ 3UHYDOHQFH
&RPSOLFDWLRQV &R PRUELGLW\

,QWURGXFWLRQ

0DODULD RFFXUV DOPRVW H[FOXVLYHO\ LQ WKH WURSLFV DQG VXEWURSLFV DQ
DSSUR[LPDWHO\ RI WKH ZRUOGdV SRSXODWLRQ PRVWO\ WKR VH OLYLQJ LQ WK
ZRUOGdV SRRUHVW FRXQWULHV DUH DW ULVN RI PDODULD (YHU\ \HDU PRUH WK
PLOOLRQ SHRSOH EHFRPH VHYHUHO\ LOO ZLWK PDODULD a PRVW FDVHV DQG
GHDWKV RFFXU ZLWKLQ VXE 6DKDUDQ \$IULFD > @

H ZRUOG KHDOWK RUJDQLJDWLRQ DQG WKH :RUOG EDQN UDQNHG PDODULD
DWKH ODUJHVW VLQJOH FRPSRQHQW RI WKH GLVHDSV EXUGHQ LQ \$IULFD
FDXVLQJ DQ DQXDO ORVV RI PLOOLRQ IXWXUH OLIH \HDUV IURP GLVDELOLW\
DQG SUHPDWXUH PRUWOLW\ > @ ,Q \$IULFD PDODULD LV UHVSRLQVLEOH IRU
DERXW RI KRVLWDO DGPLVVLRQV DQG DERXW RI RXWSDWLHQW
FRQVXOWDWLRQV > @

0DODULD LV D PDMRU FDXVH RI PRUELGLW\ DQG PRUWOLW\ LQ 1LJHULD ,W LV
HQGHPLF WKURXJKRXW WKH FRXQWULHV VHDVLRQDO YDULDWLRQV LQ
JRQH RI WKH FRXQWU\ \$W OXDMWRP RQH WKH SRSXODWLRQ
HSVRGH RI PDODULD HDFK \HDU LV DOVR WKH FRPPRQHVW FDXVH RI
RXWSDWLHQW KRVLWDO DWWHQGDQFH > @

ORVW UWRZDUGV PDODULD PDQDJPHQW DQG FRQWURO DUH DLPHG DW
XGHYHFKLOGUHQ DQG SURJUDQQWKRERRRQGHU DJH
FDWHJRULHV DUH QRW DGHTXDWHO\ FRQVLGHUHG LQ PRVW RI WKHVH SURJUDPV
DPRXQWLQJ WR VRPH NLQG RI QHJOHFW IRU WKR VH LQ WKH ROGHU DJH JURXS

\$OWKRXXJ HYLGHQFH VXJJHVWV WKDW FOLQLFDO LPPXQLW\ WR PDODULD
GHYHORSU\SRVXUH WR SDUDVLWHV DV RQH SURJUHVVHV LQ DJH WKLV
LPXQLW\ LV RQO\ SDUW DQ DQG PD\ EH

LVVWXG\ LQYHVWLJDWHG WKH PDODULD SUHYDOHQFH FRPSOLFDWLRQV DQG
FR PRUELGLW\ ZLWK QRQ FRPPXQLFDEOH GLVHVVHV DPRQJ WKH JHULDWULF
SRSXODWLRQ LQ ,KLDJZD 6RXWK (DVWHUQ 1LJHULD

0DWHULDOV DQG 0HWKRGV

6WXG\ VHWLQJ DQG SRSXODWLRQ

LVVWXG\ ZDV FDUULHG RXW LQ ,KLDJZD FRPPXQLW\ KHDOWK FHQWHU ,PR
6WDWH 6RXWK (DVWHUQ 1LJHULD /DWLWXGH 1 DQG
/RQJLWXGH (KDV D WRWDO SRSXODWLRQ RI DERXW SHRSOH DV RI
WKH FHQVXV DQG FRYHUV DQ DUHD RI VTXDUH NLORPHWHUV

,W LV ORFDWHG LQ WKH WURSLFDO UDLQ IRUHVW ZLWK FOLPDWLF DQG
HQYLURQPHQWDO FRQGLWLRQV WKDW UHSHW SRUW PDODULD
VWXG\ SRSXODWLRQV ZHUH WKRVH DERYH \HDUV RI DJH WKDW SUHVHQWHG DV
WKH KHDOWK XEMHFWV ZHUH UHFUXLWHG E\ VLP SOH EDOORWLQJ HDFK
GD\ XQWLO WKH WDUJHW SRSXODWLRQ RI VXEMHFWV ZDV UHDFKHG

+RZHYHU LQ WKH FRXUVH RI WKH VWXG\ VXEMHFWV GLHG DQG RSWHG RXW
OHDYLQJ XV ZLWK VXEMHFWV HIRU WKDW WKH
VXEMHFWV ZHUH DVVRFLDWHG ZLWK FRPSOLFDWLRQV DULVLQJ IURP WKH DLOPHQ
WKH SUHVHQWHG ZLWK LQ WKH KHDOWK IDFLOLW\

4XHVWLRQQDLUHV ZHUH XVHG WR FROOHFW VRFLRGHPRJUDSKLF GDWD IURP
WKH FRQVHQLQJ VWXG\ VXEMHFWV

6DPSOH FROOHFWLRQ DQG SDUDVLWRORJLF H[DPLQDWLRQ

7HUWLDU\		
7RWDO		
2FFXSDWLRQDO 6WDWXV		
)DUPHU		
'ULYHU		
&LYLO VHUYDQW		
8QHPSOR\HG		
7RWDO		

7DEOH

0DOH				
)HPDOH				
DERYH				
0DOH				
)HPDOH				
7RWDO				

7DEOH VWULEXWLRQ RI PDODULD SDUDVLWH LQWHQVLW\

ORUH IHPDOHV ZHUH LQIHFWHG WKDQ PDOHV
 ZLWK UHVLVH WR RWKHU RULHV RI \HUV
 \HUV DQG \HUV

